

TeraMedica Healthcare Technology
Statement of Unique Functionality
2006



Enterprise Clinical Content Management System

TeraMedica™ Healthcare Technology
Statement of Unique Functionality
Copyright 2006



TeraMedica - The Healthcare Environment

TeraMedica Healthcare Technology is both a unique entity and a solution in a rapidly changing Healthcare Information arena. TeraMedica Healthcare Technology is a prominent technology company committed to providing patient-centric software in accordance with specific customer requirements. The TeraMedica Healthcare Technology's one of a kind architecture, is built to address three major challenges in the Healthcare Information Technology domain.

Interoperability Return on Investment Completion of Electronic Health Records (EHR)

TeraMedica's Evercore® - Clinical Information Manager is a modular, scalable software solution delivering benefits to multiple stakeholders in the Healthcare space. This revolutionary modular software system has a proven ability to mold and adapt to many different customer situations. The Clinical Information Manager provides a comprehensive range of services from complete clinical content management in a Multi-Campus Medical Center and Multi-Vendor connectivity in a world renowned Cancer Care Center, and data management of remote Imaging centers. Evercore provides value to the C-level Stakeholders.

Chief Information Officer (CIO)

- **Connector** – Interoperability Between Vendors – Vendor Choice

Chief Financial Officer (CFO)

- **SmartStore™** – Return on Investment tool – Vendor Control

Chief Medical Officer (CMO)

- **Distributor** – Physician Acceptance – Complete EHR View

The unique technical and functional features of Evercore include:

1. Proven Enterprise-Wide functionality

Evercore - Clinical Information Manager was designed from the ground up, to support multiple platforms and databases, always with a view to vendor independence. Evercore, has been specifically engineered to enable configuration support for multiple, hierarchical organizational layers found within large, complex healthcare systems. These levels may represent physical or logical organizational units such as campuses, facilities, departments, practice areas, imaging suites, or other areas generating large-set clinical content.

This hierarchical structure provides mapping points related to:

- All clinical content ownership (patients, studies, etc.)
- Security access and auditing (including HIPAA)
- Storage segmentation
- Image compression types and ratios (e.g. lossless, lossey)
- Image retention periods
- External system interfaces (RIS, CIS, PMI, EHR, PHR)
- Statistical analysis

Organizational levels provide a means to group and identify subsets of patient and study records for the purpose of applying management rules. These unmatched levels of flexibility and

configuration allow many disparate departments and or sites within an enterprise to share and leverage the same storage infrastructure without losing control of the clinical management of their image and information data.

2. Transportable Methodology

Evercore Clinical Information Manager's unique data management philosophy, can deliver value to many other areas in the healthcare community, such as Pathology, Dermatology, Mammography, Telemedicine or highly specific integration situations seen in Radiation Oncology. Evercore's engine technology, also has applications in the evolving Biotech and Clinical Research segments of proactive personalized Healthcare.

3. Multiple Patient ID Support

Evercore is capable of storing any ID that is assigned to a patient and associating that with a single patient record in the system's database. All stored clinical content and images for the patient can subsequently be retrieved from any ID mapped to the patient.

4. Multiple External Interfaces

Evercore is able to interface with multiple HL7 interfaces concurrently. These interfaces could be represented by different information systems developed by different vendors, all utilizing different HL7 protocol implementations. Within a single facility Evercore can simultaneously synchronize to a cardiology, radiology and hospital information system.

5. Research/Teaching Support

Evercore's use of organization mapping also provides the ability to support image datasets dedicated to teaching or research. The system can be configured to allow the same imaging study to be stored multiple times in different organizational levels with each managed independently. Research data can also be configured to ensure rapid recall and more efficient clinical trials.

6. Standards Based

- Evercore utilizes industry standard HL7 messaging and DICOM imaging protocols ensuring tight integration with existing clinical information networks.
- Evercore supports the DICOM WADO specification for access to DICOM image objects which can be used by other web browser applications (i.e. EHR) to access images in the Evercore repository. Images may be returned in either native DICOM or JPEG formats.
- Evercore supports the IHE Framework. Evercore team is also investigating the emerging XDS and XDSi protocols.

7. High Availability/Disaster Recovery

Evercore is deployable in a highly available configuration environment that supports no downtime requirements for application upgrades. Evercore also has the ability to abstract and integrate N-tier storage architecture allowing horizontal or vertical storage capacity expansion on-the-fly. Remote disaster recovery is facilitated by synchronized database protection. Evercore can be deployed as an onsite application or as an on-demand solution.

8. Distributed Architecture

Evercore's FastGRID™ application architecture supports local caching at remote locations with central site visualization and synchronization across WANs using secure and recoverable communication protocols. The data transport protocols utilized by the FastGRID process to send information between clusters also provides for optional encryption of the transferred information and transfer performance that is faster than standard DICOM transmissions. In the event of a central system failure, the FastGRID process delivers real-time patient data accuracy to remote locations.



TeraMedica - The Connector Module

1. Interoperability - Vendor Independence

Evercore's Connector module is the broker, traffic cop, or facilitator for large data sets, delivering integration in the heterogeneous Healthcare Information Technology domain.

Connector's vendor independent functionality provides flexibility to utilize "best of breed" and the most cost effective systems and technologies from vendors both now and in the future. Evercore's compliance to standards and open systems architecture ensures that it operates with a wide-range of PACS, DICOM viewers, Information Systems (PMI, RIS, CIS, EHR, PHR) as well as hardware and storage vendor solutions. This allows for an evolving IT strategy to leverage all existing IT infrastructure, whilst ensuring portability and protecting against obsolescence.

Modalities, clinical applications and storage technologies can be easily integrated and upgraded as required, without costly data migration. After Evercore's open architecture is installed, the Chief Information Officer gains control over the planning of IT assets in the future without the challenges of today's siloed environment. Evercore Middleware represents a paradigm shift in the proprietary imaging and information domain.

2. Data Types - All Clinical Content

Modern Electronic Health Records (EHR) are being challenged to provide comprehensive patient care and a single view of all information relevant to the patient. Evercore provides access to many different data sets previously locked in silos of information. Evercore can integrate and deliver any clinical digital object and coalesce this information within a single patient view of an Electronic Medical Record system. Following are just a few of the patient-centric objects Evercore can acquire, manage and distribute:

- All Department DICOM medical images
- All Department non-DICOM medical images
- Document files
- JPEG files
- PDF documents
- MPEG files
- Wav files

3. Data Transfer - Content Connectivity

Evercore overcomes the challenge of accessing these multiple, disparate data types by using the following forms of data transfer protocols. This methodology truly allows Evercore access to the entire enterprise of large data sets:

- FTP
- File upload
- Web services

Evercore connects the environment providing a comprehensive clinical data warehouse, completing the legal Electronic Health Record. This lays a strong foundation to move towards the future of proactive, personalized healthcare, gene scheduling, and clinical research.



TeraMedica - The SmartStore™ Module

1. Intelligence – Clinical Content Lifecycle Management

The healthcare environment is cluttered with companies espousing various forms of information lifecycle management. The TeraMedica SmartStore™ Module, has a breakthrough policy engine technology, presenting a physician-oriented architecture. Evercore's SmartStore Module creates multi-departmental physician acceptance, by providing configurable clinical policies down to the study type level. This form of flexible, dynamic and transparent image management is based on clinical policies configured and maintained by the individual department or organization.

The policies may be based on specific clinical attributes of metadata, device and/or organizational details. These include clinical value-based storage plans to dynamically reallocate images to alternate storage mediums (RAID, optical disk, DVD, tape) based on retrieval characteristics of the study and also to manage compression algorithms to maximize utilization of storage medium. Evercore provides an extensive array of options for configuration of business rules. This allows unsurpassed flexibility and efficiency for complex area health networks.

2. Comprehensive - Clinical Content Repository

Evercore supports the capture, storage and distribution of all patient-centric clinical content—DICOM objects as well as other content, including JPEG, PDF, document, WAV, etc. from various sources.

Following are a few of the advantages offered by the Evercore repository:

- Evercore applies specified clinical policies dependent on content.
- Evercore can be deployed solely, in non-medical imaging departments.
- Evercore stores the captured objects in their native formats.
- Provides a user interface for uploading non-DICOM data objects and adding patient context in the system.
- Provides both a web services API and an FTP interface for uploading non-DICOM data objects with patient context in the system.
- Evercore also provides for the storage and management of documents in Adobe® PDF and Microsoft® Word format.
- Evercore supports a tiered-storage architecture that includes both near-line and off-line storage solutions.

The result is a centralized, logical, multi-site, multi-department digital archive that maintains the relative operational independence of each department and health care facility.

3. ROI – A Planning tool

- Evercore promotes service contract reduction allowing direct negotiation with the manufacturer.
- Evercore delivers the ability to renegotiate PACS vendor upgrade pricing.
- Evercore's dynamic Distributor Dashboard presents an enterprise view of short, medium, and long term storage needs.
- Evercore provides data to enable segmented storage profitability reports.
- Evercore permits "charge back" ability for use of segmented architecture.

The SmartStore policy engine combines physician acceptance with return on investment, making it the friend of any CIO and CFO.



TeraMedica - The Distributor Module

1. Scalability and Accountability – 25,000 Seats

The Evercore system in production at the Mayo Clinic in Rochester, Minnesota, USA currently supports the processing and storage of more than two million imaging procedures per annum with images sets distributed across 25,000 multi-modality diagnostic workstations. Additional performance characteristics include:

- A single instance of the Evercore software has been benchmarked by demonstration to process and store more than six million imaging procedures per annum.
- Evercore supports a tiered-storage architecture that includes both near-line and off-line storage solutions.
- Evercore's Administrator screen, allows the Enterprise user to monitor the technical landscape across all vendors working as a documented mediator.
- Evercore's Distributor Dashboard, operates as a dynamic administrator, monitoring the financial exposure the organization has at any point in time.
- Evercore's Enterprise Architecture Reports deliver a decision-making tool unsurpassed in the industry
- Evercore supports a sophisticated centralized logging and auditing feature. Administrative email can be utilized to monitor various statistics.

2. Serving Healthcare Information - Enterprise Clinical Content Distribution

- Clinical Content distribution is greatly simplified, since clinical content is stored in a single central repository.
- Diagnostic-quality medical images can be distributed to DICOM compliant workstations of your choice.
- All other clinical content is now available across local and wide area networks, improving patient care dramatically.
- Diagnostic-quality medical images can be distributed to DICOM compliant PACS systems as required with the associated patient and procedure details.
- Clinical-quality medical images can be delivered to standard clinical workstations or EHR applications utilizing standardized web protocols such as WADO.
- With Evercore's FastGRID process, images can be delivered rapidly and securely to external GPs and clinics when deployment is expanded to the WAN.
- Evercore's FastGRID process enables true business continuity in remote areas and automatic check point restart in the event of network outages.

3. One View of Patient Data – Completion of the EHR

Evercore - Univision™ now provides a comprehensive single pane view for physicians to access consolidated patient information from an electronic health record implementation that includes all clinical content in a securely integrated, HIPPA-friendly approach. With Evercore this is facilitated via a single interface to the EMR/EHR.

Core aspects of Univision include

- Vendor Independent Viewer
- Lightweight Enterprise Wide Distribution of Data
- Embedded, within context of the EMR
- Rapid Response, even in Citrix environment
- Customer-Centric Window formatting
- Off-the-shelf technology for review of non-DICOM Clinical Content.

Summary

Evercore was initially developed by TeraMedica to serve the needs of the Mayo Clinic. Furthermore, the same challenges of interoperability, need to optimize return on investment and completion of Electronic Health Records are prevalent across the healthcare landscape today. The result of these requirements, saw the development of this unique architecture which supports the Evercore Clinical Information Manager. This flexible architecture allows Evercore to provide unmatched scalability, performance, and configurability within the clinical environment with an eye to serve the rapidly developing, life sciences domain.

Evercore is an industry leader in its ability to operate seamlessly across all layers of a healthcare enterprise to deliver clinical content when and where required.